

Claims

1. An oxidised carbohydrate derived from a carbohydrate containing 1,2-dihydroxyethylene groups in its repeating units, the 1,2-dihydroxyethylene groups having at least partially been oxidised to dialdehyde groups, and a part of the aldehyde groups having been oxidised to carboxylic acid groups, the ratio between aldehyde groups and carboxyl groups being between 25/75 and 80/20.
2. An oxidised carbohydrate according to claim 1, containing on average 0.1-1.5 carboxyl groups and 0.5-1.9 aldehyde groups per oxidised 1,2-dihydroxyethylene group.
3. An oxidised carbohydrate according to claim 2, containing on average 0.5-1.3 carboxyl groups and 0.7-1.5 aldehyde groups per oxidised 1,2-dihydroxyethylene group.
4. An oxidised carbohydrate according to any one of claims 1-3, containing on average 0.1-1.2 carboxyl groups and 0.3-1.2 aldehyde groups per repeating unit.
5. An oxidised carbohydrate according to claim 1 or 2, wherein the carbohydrate is starch, amylose or amylopectin or a modification thereof.
6. An oxidised carbohydrate according to claim 1 or 2, wherein the carbohydrate is cellulose or a modification thereof.
7. An oxidised carbohydrate according to claim 1 or 2, wherein the carbohydrate is a 2,1-fructan.
8. A process for producing an oxidised carbohydrate according to any one of claims 1-7, comprising oxidising a dialdehyde carbohydrate obtainable by oxidising a carbohydrate containing 1,2-dihydroxyethylene groups in its repeating units, the oxidation of the dialdehyde carbohydrate being performed with a catalytic amount of molecular halogen, in particular molecular bromine.
9. A process according to claim 8, wherein the oxidation with molecular halogen is performed at a pH between 3 and 7.

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10. A process according to claim 7 or 8, wherein the molecular halogen is produced in situ by reaction of halide with a carboxylic peracid.

11. A process for producing an oxidised, amino-substituted carbohydrate, comprising reductively aminating residual aldehyde groups in the oxidised carbohydrate obtained by the process according to any one of claims 8-10.

12. An amino-substituted oxidation product derived from a carbohydrate containing 1,2-dihydroxyethylene groups in its repeating units, these dihydroxyethylene groups having at least partially been oxidised to dialdehyde groups, the product containing on average 0.1-1.5 carboxyl groups and 0.1-1.9 substituted amine groups per oxidised 1,2-dihydroxyethylene group.

13. An amino-substituted oxidation product according to claim 12, containing on average 0.1-1.2 carboxyl groups and 0.3-1.2 substituted amino groups per repeating unit.

14. An amino-substituted oxidation product according to claim 12 or 13, wherein said substituted amino group has the formula $-NR^1R^2$, wherein R^1 represents hydrogen, a C_1 - C_{20} alkyl, alkenyl or alkynyl group optionally substituted with carboxy, hydroxy, C_1 - C_{12} alkoxy, amino, carbamoyl and/or aryl, including natural and synthetic amino acid residues, and R^2 represents hydrogen, amino, substituted amino, hydroxy, alkoxy, or a C_1 - C_{12} alkyl, alkenyl or alkynyl group optionally substituted with carboxy, hydroxy, C_1 - C_{12} alkoxy, amino and/or carbamoyl, or a substituted iminomethyl group, or R^1 and R^2 , together with the nitrogen atom to which they are bound, represent a three- to seven-membered heterocyclic system, optionally containing one or more further heteroatoms selected from nitrogen, oxygen and sulphur and optionally substituted with carboxy, hydroxy, oxo, C_1 - C_{12} alkyl, alkenyl, alkynyl or alkoxy, amino, carbamoyl and/or aryl.